

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A packet forwarding system, comprising:
  - an input unit for inputting first data in units of transmission;
  - a packet memory management unit for assembling the input first data into an Internet Protocol (IP) packet and loading the IP packet into a packet memory, and reading out an IP packet header and a pointer of an IP packet trailer connected to the IP packet header;
  - a header processing unit for deciding a packet classification and a transmission destination by using the IP packet header provided from the packet memory management unit, and reporting to the packet memory management unit the pointer of the IP packet trailer to be connected to the IP packet header; and
  - an output unit for dividing the IP packet header and the IP packet trailer into second data in said units of transmission, receiving the IP packet header directly from the header processing unit, reading the IP packet trailer directly from the packet memory of the packet memory management unit based on the reported pointer of the IP packet trailer to be connected to the IP packet header, and outputting the second data to a channel;
    - wherein the packet memory management unit comprises:
    - the packet memory comprising plural buffers loading the IP packet, and the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header; and
    - a controller for reading from a packet memory the IP packet header and the pointer of the IP packet trailer connected to the IP packet header, according to a transmission order determined by a transmission header queue, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing unit,
    - wherein the controller, if the IP packet header and the pointer of the IP packet trailer connected to the IP packet header are re-transmitted from the header processing

unit, reads the IP packet trailer connected to the IP packet header from a buffer corresponding to the pointer of the IP packet trailer, and transmits the IP packet trailer to the output unit.

2. (currently amended): The packet forwarding system as claimed in claim 1, wherein the packet memory management unit further includes/comprises:
  - a packet generator for generating the IP packet from the input first data; and
  - ~~the packet memory comprising plural buffers loading the IP packet, and the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header;~~
  - a transmission header queue for loading a pointer of the IP packet header corresponding to a transmission order of the IP packet; and,
  - ~~a controller for reading from the packet memory the IP packet header and the pointer of the IP packet trailer connected to the IP packet header, according to the transmission order determined by the transmission header queue, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing unit.~~
3. (canceled).
4. (currently amended): A packet forwarding system, comprising:
  - an input unit for inputting first data in units of transmission;
  - a packet memory management unit for assembling the input first data into an Internet Protocol (IP) packet and loading the IP packet into a packet memory, and reading out an IP packet header and a pointer of an IP packet trailer connected to the IP packet header;
  - a header processing unit for deciding a packet classification and a transmission destination by using the IP packet header provided from the packet memory management unit, and reporting to the packet memory management unit the pointer of the IP packet trailer to be connected to the IP packet header; and

an output unit for dividing the IP packet header and the IP packet trailer into second data in said units of transmission, receiving the IP packet header directly from the header processing unit, reading the IP packet trailer directly from the packet memory of the packet memory management unit based on the reported pointer of the IP packet trailer to be connected to the IP packet header, and outputting the second data to a channel. The packet forward system as claimed in claim 2;

wherein the packet memory management unit comprises:

a packet generator for generating the IP packet from the input first data;

a transmission header queue for loading a pointer of the IP packet header corresponding to a transmission order of the IP packet; and

a controller for reading from the packet memory the IP packet header and the pointer of the IP packet trailer connected to the IP packet header, according to the transmission order determined by the transmission header queue, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing unit,

wherein the packet memory comprises plural buffers loading the IP packet, and the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header; and

wherein the controller verifies whether a different IP packet trailer connected to the IP packet trailer exists by using the buffer attribute information corresponding to the pointer of the IP packet trailer, and, if the different IP packet trailer exists, reading and transmitting the different IP packet trailer to the output unit.

5. (currently amended): A packet forwarding system, comprising:

an input unit for inputting first data in units of transmission;

a packet memory management unit for assembling the input first data into an Internet Protocol (IP) packet and loading the IP packet into a packet memory, and reading out an IP packet header and a pointer of an IP packet trailer connected to the IP packet header;

a header processing unit for deciding a packet classification and a transmission destination by using the IP packet header provided from the packet memory management

unit, and reporting to the packet memory management unit the pointer of the IP packet trailer to be connected to the IP packet header; and

an output unit for dividing the IP packet header and the IP packet trailer into second data in said units of transmission, receiving the IP packet header directly from the header processing unit, reading the IP packet trailer directly from the packet memory of the packet memory management unit based on the reported pointer of the IP packet trailer to be connected to the IP packet header, and outputting the second data to a channel. The packet forwarding system as claimed in claim 2;

wherein the packet memory management unit comprises:

a packet generator for generating the IP packet from the input first data;

a transmission header queue for loading a pointer of the IP packet header corresponding to a transmission order of the IP packet; and

a controller for reading from the packet memory the IP packet header and the pointer of the IP packet trailer connected to the IP packet header, according to the transmission order determined by the transmission header queue, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing unit;

wherein the packet memory comprises plural buffers loading the IP packet, and the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header; and

wherein the buffer attribute information includes a front pointer of a front buffer connected to a front of the buffer and a rear pointer of a rear buffer connected to a rear of the buffer, and information on whether a different IP packet trailer connected after the IP packet trailer, exists.

6. (currently amended): A packet forwarding method, comprising:

inputting, by an input unit, first data in units of transmission;

a packet memory management step of generating, by a packet memory management unit, the input first data into an Internet Protocol (IP) packet and loading the IP packet into a packet memory, and reading out and sending an IP packet header and a pointer of an IP packet trailer connected to the IP packet header;

a header processing step of deciding, by a header processing unit, a packet classification and a transmission destination by using the IP packet header provided from the packet memory management unit, and reporting to the packet memory management unit the pointer of the IP packet trailer to be connected to the IP packet header; and

an output step for dividing, by an output unit, the IP packet header and the IP packet trailer into second data in said units of transmission, for receiving the IP packet header directly from the header processing unit, for reading the IP packet trailer directly from the packet memory of the packet memory management unit based on the reported pointer of the IP packet trailer to be connected to the IP packet header, and outputting the second data to a channel,

wherein the packet memory management step comprises:

loading the IP packet into plural buffers, the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header; and

reading the IP packet header and the pointer of the IP packet trailer connected to the IP packet header according to a transmission order, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing unit,

wherein the packet memory management step further includes a step of, if the IP packet header and the pointer of the IP packet trailer connected to the IP packet header are re-transmitted from the header processing unit, reading the IP packet trailer connected to the IP packet header from a buffer corresponding to the pointer of the IP packet trailer, and transmitting the IP packet trailer to the output unit.

7. (currently amended): The packet forwarding method as claimed in claim 6, wherein the packet memory management step ~~further includes steps of~~ comprises:

assembling the input first data into the IP packet;

~~loading the IP packet into plural buffers, the plural buffers storing buffer attribute information and the pointer of the IP packet trailer connected to the IP packet header;~~

~~reading the IP packet header and the pointer of the IP packet trailer connected to the IP packet header according to a transmission order, and transmitting the pointer of the IP packet trailer and the IP packet header to the header processing;~~

8. (canceled).
9. (currently amended): A packet forwarding method, comprising:  
inputting, by an input unit, first data in units of transmission;  
a packet memory management step of generating, by a packet memory  
management unit, the input first data into an Internet Protocol (IP) packet and loading the  
IP packet into a packet memory, and reading out and sending an IP packet header and a  
pointer of an IP packet trailer connected to the IP packet header;  
a header processing step of deciding, by a header processing unit, a packet  
classification and a transmission destination by using the IP packet header provided from  
the packet memory management unit, and reporting to the packet memory management  
unit the pointer of the IP packet trailer to be connected to the IP packet header; and  
an output step for dividing, by an output unit, the IP packet header and the IP  
packet trailer into second data in said units of transmission, for receiving the IP packet  
header directly from the header processing unit, for reading the IP packet trailer directly  
from the packet memory of the packet memory management unit based on the reported  
pointer of the IP packet trailer to be connected to the IP packet header, and outputting the  
second data to a channel].The packet forward method as claimed in claim 7,  
wherein the packet memory management step includes steps of:  
assembling the input first data into the IP packet;  
loading the IP packet into plural buffers, the plural buffers storing buffer attribute  
information and the pointer of the IP packet trailer connected to the IP packet header;  
reading the IP packet header and the pointer of the IP packet trailer connected to  
the IP packet header according to a transmission order, and transmitting the pointer of the  
IP packet trailer and the IP packet header to the header processing unit, and  
wherein the packet memory management step verifies  
verifying whether a different IP packet trailer connected to the IP packet trailer  
exists by using the buffer attribute information corresponding to the pointer of the IP

packet trailer, and, if the different trailer exists, reading and transmitting the different IP packet trailer to the output unit.

10. (currently amended): A packet forwarding method, comprising:  
inputting, by an input unit, first data in units of transmission;  
a packet memory management step of generating, by a packet memory  
management unit, the input first data into an Internet Protocol (IP) packet and loading the  
IP packet into a packet memory, and reading out and sending an IP packet header and a  
pointer of an IP packet trailer connected to the IP packet header;  
a header processing step of deciding, by a header processing unit, a packet  
classification and a transmission destination by using the IP packet header provided from  
the packet memory management unit, and reporting to the packet memory management  
unit the pointer of the IP packet trailer to be connected to the IP packet header; and  
an output step for dividing, by an output unit, the IP packet header and the IP  
packet trailer into second data in said units of transmission, for receiving the IP packet  
header directly from the header processing unit, for reading the IP packet trailer directly  
from the packet memory of the packet memory management unit based on the reported  
pointer of the IP packet trailer to be connected to the IP packet header, and outputting the  
second data to a channel].~~The packet forwarding method as claimed in claim 7,~~  
wherein the packet memory management step includes steps of:  
assembling the input first data into the IP packet;  
loading the IP packet into plural buffers, the plural buffers storing buffer attribute  
information and the pointer of the IP packet trailer connected to the IP packet header;  
reading the IP packet header and the pointer of the IP packet trailer connected to  
the IP packet header according to a transmission order, and transmitting the pointer of the  
IP packet trailer and the IP packet header to the header processing unit, and  
wherein the buffer attribute information includes a front pointer of a front buffer  
connected to a front of the buffer and a rear pointer of a rear buffer connected to a rear of  
the buffer, and information on whether the different IP packet trailer connected after the  
IP packet trailer exists.

11 - 14. (canceled).